

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A medical navigation system for controlling the distal end of an elongate flexible medical device in a subject's body, the system comprising:

an elongate flexible medical device together with an electronic identification device that includes information on the physical and geometric properties of the elongate medical device, and identification information that provides for elongate flexible medical device identification;

a navigation device for actuating the distal end of an elongate flexible medical device and thereby changing its orientation;

an electronic interface for selectively operating the navigation device for selectively controlling the orientation of the distal end of the elongate flexible medical device, the electronic interface comprising a processor and at least one software program that enables navigation control only in the presence of the electronic identification device, wherein the interface provides actuation instructions to the navigation device for controlling the distal end of the device, which instructions take into account the physical and geometric properties of the elongate medical device obtained from the electronic identification device.

2. (Original) The medical navigation system according to claim 1 wherein the electronic identification device includes a memory, and wherein the interface includes a reader for reading the memory.

3. (Original) The medical navigation system according to claim 1 wherein the electronic identification device includes a memory unit and a processing unit that communicates with the interface for transferring information.

4. (Original) The medical navigation system according to claim 2 wherein the memory contains unique identifying information about the type of device, and wherein

the interface includes a database of the unique identifying information of the type of devices with which the interface is intended to operate.

5. (Original) The medical navigation system according to claim 3 wherein the memory contains unique identifying information about the type of device, and wherein the interface includes a database of the unique identifying information of the type of devices with which the interface is intended to operate.

6. (Original) The medical navigation system according to claim 1 wherein the electronic identification device is a circuit that is connected to the interface.

7. (Withdrawn) The medical navigation system according to claim 1 wherein the electronic identification device is a smart card with magnetically stored information that can be electronically read into the interface.

8. (Original) The medical navigation system according to claim 2 wherein the memory contains unique identifying information about the device, and wherein the interface includes a database of the unique identifying information for devices with which the interface is intended to operate.

9. (Original) The medical navigation system according to claim 3 wherein the memory contains unique identifying information about the device, and wherein the interface includes a database of the unique identifying information for devices with which the interface is intended to operate.

10. (Original) The medical navigation system according to claim 1 wherein the electronic identification device is a RF circuit that transmits a signal to the interface.

11. (Original) The medical navigation system according to claim 1 wherein the interface includes a plurality of programs, each adapted for use with a different type of elongate flexible medical device, each program operating only when an electronic identification device for the particular type of elongate flexible medical device is present.

12. (Original) The medical navigation system according to claim 1 wherein the electronic identification device includes an integrated circuit.

13. (Original) The medical navigation system according to claim 1 wherein the interface operates on the electronic identification device to prevent reuse of the elongate flexible medical device.

14. (Original) The medical navigation system according to claim 1 wherein the interface tracks elapsed time of use of the identified elongate flexible medical device and invalidates use of the identified elongate flexible medical device when the elapsed time exceeds a pre-defined limit.

15. (Original) The electronic identification device according to claim 3 wherein the processing unit operates on the memory unit to prevent reuse of the elongate flexible medical device.

16. (Original) The medical navigation system according to claim 1 wherein the electronic identification device includes memory, and wherein the interface adds to or deletes information stored on the memory to prevent reuse of the device.

17. (Original) The medical navigation system according to Claim 1 wherein the at least one software program controls navigation by employing a computational model of flexible device physics.

18. (Withdrawn) A method of securing a medical navigation system from unauthorized use, the method comprising preventing the operation of at least one computer program of the medical navigation system except in the presence of an elongate flexible medical device having an electronic identification device.

19. (Withdrawn) The method of securing a medical navigation system from unauthorized use according to claim 18, further comprising altering the identification device after use of the medical device, to prevent reuse of the medical device.

20. (Withdrawn) A method of automatically adapting a medical navigation system for navigating the distal end of an elongate medical device, the method comprising reading a memory associated with the elongate device, and adapting the system based at least in part from the memory.

21. (Withdrawn) The method according to claim 20 wherein the step of adapting the system comprises running a program for the particular device as determined from the information read from the memory.

22. (Withdrawn) The method according to claim 20 wherein the step of adapting the system comprises using properties of the particular device as determined from the information read from the memory, in a program for navigation control.

23. (Currently Amended) A medical navigation system for navigating the distal end of an elongate flexible medical device inside a subject's body, the system comprising an elongate flexible medical device; a navigation device for actuating and orienting the distal end of the elongate medical device; an interface comprising a processor and at least one software program for selectively controlling the navigation device to selectively orient the distal end of the elongate medical device, the improvement comprising an electronic identification device provided with the elongate flexible medical device, which electronic identification device includes information on the physical and geometric properties of the elongate medical device that the interface takes into account in providing actuation instructions to the navigation device for controlling the distal end of the device, and further includes identification information that enables at least one navigation control software program of the interface to function.

24. (Original) The medical navigation system according to claim 23 wherein the at least one software program controls navigation by employing a computational model of flexible device physics.

25. (Original) The medical navigation system according to claim 23 wherein the electronic identification device includes a memory, and wherein the interface is adapted to read the memory.

26. (Withdrawn) The medical navigation system according to claim 23 wherein the electronic identification device is in the form of a smart card with magnetically stored information, and wherein the interface can access this information through the use of an electronic smart card reader.

27. (Original) The medical navigation system according to claim 23 wherein the electronic identification device is an integrated circuit including a memory, which is connected to the interface.

28. (Original) A medical navigation system for navigating the distal end of an elongate flexible medical device inside a subject's body, the system comprising an elongate flexible medical device; a navigation device for actuating and orienting the distal end of the elongate flexible medical device; an interface comprising a processor and at least two software programs each adapted for controlling the navigation device for a specific type of elongate flexible medical device to selectively orient the distal end of the elongate flexible medical device, the improvement comprising an electronic identification device provided with the elongate flexible medical device, which electronic identification device includes information on the physical and geometric properties of the elongate medical device that the interface takes into account in providing actuation instructions to the navigation device for controlling the distal end of the device, and further includes identification information that enables the appropriate navigation control software program for the particular medical device of the interface to function.

29. (Original) The medical navigation system according to claim 28 wherein at least one of the at least two software programs controls navigation by employing a computational model of flexible device physics.

30. (Original) The medical navigation system according to claim 28 wherein the electronic identification device includes a memory, and wherein the interface is adapted to read the memory.

31. (Withdrawn) The medical navigation system according to claim 28 wherein the electronic identification device is in the form of a smart card with magnetically stored information, and wherein the interface can access this information through the use of an electronic smart card reader.

32. (Withdrawn) The medical navigation system according to claim 28 wherein the electronic identification device is an integrated circuit including a memory, which is connected to the interface.

33. (Currently Amended) A medical navigation system for navigating the distal end of an elongate flexible medical device inside a subject's body, the system comprising an elongate flexible medical device; a navigation device for actuating and orienting the distal end of the elongate flexible medical device; an interface comprising a processor and at least one software program for selectively controlling the navigation device to selectively orient the distal end of the elongate flexible medical device, the improvement comprising an electronic identification device provided with the elongate flexible medical device, which provides information for the software program about the physical and geometric properties of the medical device which the software program takes into account in providing actuation instructions to the navigation device for controlling the distal end of the elongate medical device.

34. (Original) The medical navigation system according to claim 33 wherein the at least one software program controls navigation by employing a computational model of flexible device physics.

35. (Original) The medical navigation system according to claim 33 wherein the electronic identification device includes a memory, and wherein the interface is adapted to read the memory.

36. (Withdrawn) The medical navigation system according to claim 33 wherein the electronic identification device is in the form of a smart card with magnetically stored information, and wherein the interface can access this information through the use of an electronic smart card reader

37. (Withdrawn) The medical navigation system according to claim 33 wherein the electronic identification device is an integrated circuit including a memory, which is connected to the interface.

38. (Currently Amended) A medical navigation system for controlling the distal end of an elongate medical device in the body of the patient;

an elongate flexible medical device;

a memory device provided with the flexible medical device that includes information on the physical and geometric properties of the elongate medical device;

a control system for controlling the position and/or orientation of the distal end of the elongate medical device;

an interface for accepting inputs from the user to cause the control system to selectively change the position and/or orientation of the elongate medical device; the interface sending actuation instructions to the control system dependent in part upon the medical device's physical and geometric property information obtained from the memory device.

39. (Original) The medical navigation system according to claim 38 wherein the interface incorporates a software program that controls navigation by employing a computational model of flexible device physics.

40. (Original) The system according to claim 38 wherein the memory device includes storing unique device identification information for the elongate flexible medical device, and wherein the interface includes a database of unique device identification information and corresponding device properties, and wherein the instructions sent to the control system take into account the device properties determined from the database.

41. – 48. (Cancelled)

49. (New) The medical navigational control system according to claim 38 wherein said information includes physical and geometric properties unique to the device that are relevant to navigational control of the device.

50. (New) The medical navigational control system according to claim 49 wherein the physical and geometric properties of the device are used in navigational control algorithms for guiding the device.

51. (New) The medical navigational control system according to claim 50 wherein the information including physical and geometric properties of the device includes at least one of the length of one or more flexible segments of the device, one or more cross-sectional areas of the device, and an elastic property of the device.

52. (New) The medical navigational control system according to claim 38 wherein the control system is a magnetic navigation system for controlling an elongate

medical device that further includes at least one magnet, and said information includes physical properties of the elongate medical device including at least a magnet dimension or a magnet type.

53. (New) The medical navigational control system according to claim 38 wherein